

Title: Super Symmetry

Link to Outcomes:

- **Problem Solving** Students will use problem-solving approaches to investigate and understand mathematical content.
- **Communication** Students will relate their everyday language to mathematical language and symbols.
- **Reasoning** Students will use models, known facts, properties, and relationships to explain their thinking.
- **Connections** Students will use mathematics in other curriculum areas.
- **Geometry And Spatial Sense** Students will develop spatial sense.

Brief Overview:

The students will write their names in cursive to create a symmetrical figures. The teacher will read the book The Bedspread by Sylvia Fair. The students will construct a symmetrical picture with a partner using plane figures, good mathematical vocabulary, and descriptive words.

Grade/Level:

Grade 3

Duration/Length:

Two class sessions should be allocated for this lesson.

Prerequisite Knowledge:

Students should have working knowledge of the following skills:

- Names of polygons: pentagon, hexagon, heptagon, octagon, nonagon, and decagon
- Characteristics of polygons
- Line segments
- Vertex of an angle
- Cursive handwriting

Objectives:

- Students will construct polygons.
- Students will identify symmetrical figures.
- Students will construct lines of symmetry for plane figures.

Materials/Resources/Printed Materials:

- The Bedspread by Sylvia Fair
- Thirty pieces of white chalk
- Thirty pieces of 8" x 12" black construction paper
- Thirty pieces of white ditto paper
- Thirty pieces of 8" x 12" white construction paper for student pictures
- Each pair of students will need a partition
- Crayons / markers / pencils / scissors
- Overhead projector / transparency
- Overhead pattern blocks

Development/Procedures:

- Give each student one piece of black construction paper, one piece of white ditto paper, and one piece of chalk. Ask the students to fold the black construction paper vertically and place it on their desks so the folded side is closest to their bodies.
- Ask the students to write their names in cursive, touching the bottom fold, in their best large handwriting.
- Ask the students to cut around their names, **not cutting on the fold**. When the students open up the black construction paper, they will see that their names are in two parts that are symmetrical.
- Ask the students to glue their black symmetrical names on the white ditto papers.
- Ask the students to share their pictures and discuss the commonalities of symmetry.
- Display the students' work in the classroom.
- Read the book The Bedspread. Discuss the different shapes the characters used in their quilt.
- Model with a student using the overhead projector and the overhead pattern blocks how to create a symmetrical picture by giving oral directions. The student will build the scene by listening to the math vocabulary used by the teacher and the specific shapes.
- Explain to the students that with a partner they will create a symmetrical picture by giving oral directions. Ask the students to use a folder or a book as a partition between each partner. Each person will take a turn naming one shape, color, size, and location for the picture. However, they will not be able to look at the other person's picture until all the directions are given.
- When all the pictures are completed, collect, and mix the pictures. Then have the students try to match symmetrical pictures.
- Ask the students to write in their math journal three things that helped them create their symmetrical pictures.

Evaluation:

Assess the students journal responses and symmetrical pictures.
Observe the students during cooperative work groups.

Extension/Follow Up:

Ask the students to complete a similar activity using *MicroWorlds Project Builder* or other logo software programs. Make sure the computers are facing away from each other. Ask the students to check each other's monitors to see if they have created a symmetrical picture. Print the students' work to observe and assess their finished product.

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* Adapted from *Mathematics and Literature*, Marilyn Burns.